3.1.5 MINIMUM INEEL PROCESSING ALTERNATIVE

DOE has included analysis of an off-INEEL processing location for HLW in this EIS in order to ensure that a full range of reasonable treatment, storage and transportation alternatives has been considered. Treating INEEL HLW at Hanford (e.g., because of economies of scale, avoiding the cost for two major facilities, etc.) is a reasonable alternative in the context of the National Environmental Policy Act.

The Minimum INEEL Processing Alternative represents the minimum amount of HLW processing at INEEL that would still satisfy the purpose and need described in Chapter 2. Sufficient information is not available for DOE to make a decision on selection of this alternative. This alternative is being evaluated at a programmatic level now to help determine whether it is prudent to wait until the alternative can be evaluated in more detail. If treatment at Hanford looks promising, DOE could decide, based on this EIS, to defer decisions on new waste immobilization facilities at INEEL until more information is available, based on Hanford Phase I operating experience and Hanford Phase II conceptual design, for example.

The Minimum INEEL Processing Alternative could substantially reduce the amount of onsite construction, handling, and processing of HLW at INEEL. The alternative includes transport of HLW calcine to Hanford followed by a return of treated HLW and low-level waste to INEEL for storage and disposal, respectively. It provides an opportunity to evaluate the use of comparable DOE or privatized waste treatment facilities in the region. The Hanford Site was selected for this analysis based on the alternative selection process described in DOE (1999c).

While the Hanford Site has been identified as a potential location for treatment of INEEL HLW, DOE recognizes that the ability to make an early decision involving processing INEEL HLW at Hanford is limited. The Hanford Site is in the early stages of acquiring facilities to treat and immobilize its HLW. DOE has awarded a phased contract to privatize certain portions of the Tank Waste Remediation System project at the Hanford Site. Phase I of that work consists of two parts; IA and IB. Phase IA was completed in 1998 and included preparing conceptual designs, environmental and regulatory reports, and other activities associated with the planning process for the construction and operation of facilities to treat the Hanford tank wastes (DOE 1998c).

Phase IB will consist of two parts, B-1 and B-2. Part B-1 began in August 1998 and includes a 24-month design phase during which technology scale-up, regulatory, permitting, and financing issues, and the safety basis for operations will be addressed. In the year 2000, DOE will decide whether to proceed with the construction and operations of Hanford Phase I treatment facilities (Part B-2). Part B-2 would include waste feed management, pretreatment (e.g., sludge washing and radionuclide separations), and immobilization of HLW and low-activity waste. Current plans are for the Phase I facilities to operate from 2006 through 2018 and process about 10 percent of the total mass (25 percent of the total radioactivity) of the Hanford site tank waste (DOE 1998d). The Phase I facilities would not be designed to accommodate HLW from offsite sources.

Assuming the Hanford Phase I is successful, the Phase I facilities could be expanded, or additional facilities could be built for a Phase II treatment option capable of processing most of the Hanford tank wastes and, potentially, the INEEL HLW calcine. DOE will be in a better position to analyze the technical feasibility and cost effectiveness of processing INEEL HLW calcine in Hanford facilities after the Hanford Phase IB facilities have operating experience.

Since a decision on proceeding with conceptual design of the Phase II Hanford vitrification facilities is well in the future, DOE cannot determine at this time whether treating INEEL HLW calcine in Hanford facilities is technically feasible or cost effective. Even if processing of INEEL HLW at the Hanford Site were feasible, DOE would have to consider the potential regulatory implications and any impacts to DOE commitments regarding completion of Hanford tank waste processing. If DOE decides to pursue the Minimum INEEL Processing Alternative, addi-

tional National Environmental Policy Act documentation would be prepared in due course on alternatives associated with treatment of INEEL HLW calcine at the Hanford Site.

Under this alternative, DOE could retrieve and transport the HLW calcine to a packaging facility, where it would be placed into shipping containers. The containers would then be shipped to DOE's Hanford Site in Richland, Washington, where the HLW calcine would be separated into high-activity and low-activity fractions. Each fraction would be vitrified.

For purposes of analysis, DOE assumes the vitrified HLW and low-level waste are returned to INEEL. (Alternatively, the vitrified wastes could be shipped directly to appropriate offsite facilities rather than returning to INEEL.) The vitrified HLW would be stored in a road-ready condition until transported to a geologic repository. The vitrified low-level waste would be disposed of in an INEEL facility or shipped to an offsite low-level waste disposal facility. Operation of subsidiary waste treatment facilities is the same as discussed in Section 3.2.1.

The liquid mixed transuranic waste (SBW, newly generated liquid waste, and tank heels) would be retrieved, filtered, and transported to a treatment facility, where it would be processed through an ion exchange column to remove cesium. The loaded ion exchange resin would be temporarily stored at INEEL, dried and containerized, and transported to the Hanford Site for vitrification. After cesium removal, the liquid wastes would be fed to a grouting process. The grout would be packaged in 55-gallon drums and transported to the Waste Isolation Pilot Plant for disposal as contact-handled transuranic waste. As discussed in Section 3.3.6, DOE does not currently consider shipment of mixed transuranic waste (SBW or newly generated liquid waste) to the Hanford Site for treatment to be a reasonable alternative.

There are two scenarios for shipping INEEL's HLW calcine to the Hanford Site. The first scenario is to ship the calcine to the Hanford Site on a just-in-time basis, over a three-year period starting in 2028 (or later). The calcine would be shipped to the Hanford Site at the rate it can be introduced directly to the treatment process, so that construction of canister storage buildings would not be necessary. A second scenario is to ship calcine during the years 2012 through 2025, which would require the Hanford Site to build up to three canister storage buildings for interim storage of the INEEL HLW calcine prior to treatment. Chapter 5 presents the environmental consequences at INEEL and Hanford of these scenarios, including transportation.

In Section 3.1.3.1, DOE describes three methods for disposing of the grouted low-level waste fraction: (1) in a new INEEL Low-Activity Waste Disposal Facility; (2) in an offsite low-level waste disposal facility; and (3) in the Tank Farm and bin sets. The vitrified low-level waste fraction returned from Hanford would not be suitable for disposal in the Tank Farm and bin sets. Therefore, only the remaining two disposal methods are analyzed for the Minimum INEEL Processing Alternative.

Figure 3-14 shows the Minimum INEEL Processing Alternative. The major facilities and projects required to implement the Minimum INEEL Processing Alternative are listed in Appendix C.6, except for the transportation projects, which are addressed in Appendix C.5. Appendix C.8 describes the Hanford Site and the activities that would be performed there treating INEEL waste. Figure 3-15 shows the facilities at INTEC (see Figure 3-4 for comparison).

FIGURE 3-15.
Artist's conception for location of facilities that would be constructed under the Minimum INEEL Processing Alternative.